SUSTAINABLE SHOREVIEW
Energy Conservation and Efficiency Strategic Planning

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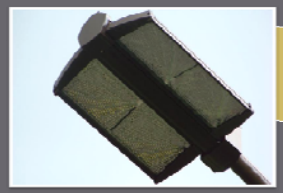
Recommendations

- Negotiate a flat rate for LED electricity prices with energy provider (Xcel Energy) and the Public Utilities Commission.
- Monitor LED fixture prices and integrate LED upgrades into the maintenance schedule for city-owned 175W Mercury Vapor (MV) streetlights.

- Order a formal energy audit of the Shoreview City Complex
- Increase energy efficiency and cut operating costs of Shoreview City Complex by upgrading the cooling unit
- Explore options for financing energy efficiency projects in public buildings

- Distribute pamphlet with energy efficiency strategies and funding options to residents of Shoreview
- Create an 'Energy Efficiency' link on Shoreview city website with information from this project and pamphlet to engage a wider audience



Cost Benefit Analysis of LED Streetlight Upgrade

Findings

- 50-watt LED streetlights consume approximately 70% less energy than 175-watt MV streetlights
- LED fixtures are currently four times more expensive than HPS fixtures, making upgrade costs a major barrier to implementation
- HPS and MV streetlights are charged on flat monthly fee basis, but LED streetlights are charged at a $/kWh rate ($0.06705/kWh)
- LED streetlights must be metered, resulting in a $96 annual service charge per meter. There are no energy cost savings unless many streetlights are metered together.

Streetlight Type (One Streetlight)	50W LED	66W LED	100W LED	100W HPS	175W MV
Total Watts Consumed (W)	56.00	69.00	104.00	120.00	190.00
Avg. Usage/Day (Hrs)	9.00	9.00	9.00	9.00	9.00
Annual Electricity Usage (kWh)	183.96	226.67	341.64	394.20	624.15
Annual Electricity Usage (as % of MV Usage)	29.47	36.32	54.74	63.16	100.00
Annual Electricity Cost ($)	12.33	15.20	22.91	26.43	41.85
Annual Carbon Emissions (metric tons CO_2)	0.13	0.16	0.25	0.28	0.45

Table 1. Energy usage, cost and carbon emissions of one streetlight by type, (assuming all streetlights are charged $.06705/kWh) Shoreview, Minnesota, 2009.

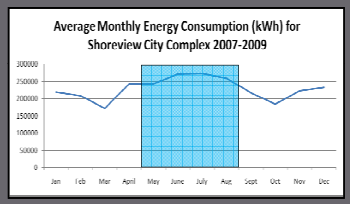
Methods

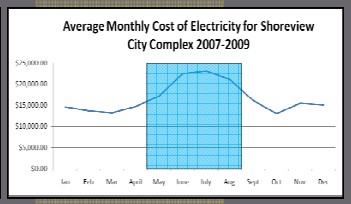
- Conducted a cost-benefit analysis to determine the potential for reductions in energy usage, cost, and carbon emissions for each streetlight type.
- Calculated the payback period and carbon emissions reductions for a number of scenarios varying the type and number of streetlights being upgraded.

Energy Efficiency of Shoreview City Complex

Findings

- Energy use data from 2007 to 2009 shows 2009 has the lowest energy use; this may be attributed to building improvements and climatic fluctuations.
- Total utility cost for the Shoreview City Complex in 2008 (exclusive of water) was $344,056.00; approximately $3.11 per square foot.
- Total carbon output for the Shoreview City Complex in 2008 was 2,611 metric tons, equivalent to the annual greenhouse gas emissions of 478 passenger vehicles.
- The highest energy use (in kilowatt-hours) and associated costs over three years, were from May through August. This may be attributed to inefficient cooling technology causing peak demand charges.
- The City Complex is cooled by a 175-ton water-cooled electric chiller which has not been replaced since 1990; Full-load efficiency is 1.04 kW/ton, recommended efficiency is 0.59 kW/ton.
- The chiller accounts for approximately 30% of the building's energy use between June and August.





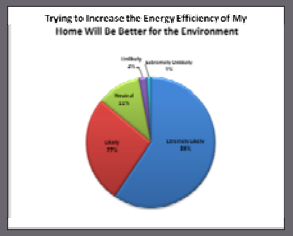
Methods

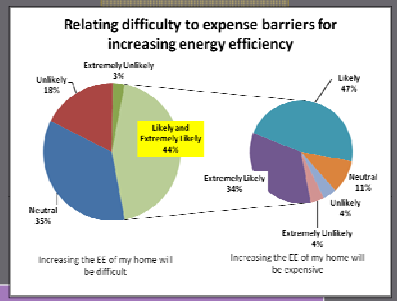
- Inventoried B3 energy use data for the City Hall and Community Center site.
- Identified areas of energy consumption, costs, and carbon output estimates, as well as where improvement options exist.
- Researched chiller efficiency compared with best available models.

Homeowner Perceptions of Energy Efficiency and Conservation

Findings

- Over 75% of Shoreview residents that responded to the survey felt that increasing the energy efficiency of their home would benefit the environment.
- Approximately 65% of respondents perceived barriers to increasing the energy efficiency of their home.
- The two greatest perceived barriers were project difficulty and financing.





Methods

- Analyzed Shoreview household perceptions and behaviors regarding energy efficiency (Nelson et. al, 2005).
- Identified energy efficiency projects for residential homes.
- Identified possible local, state and federal funding options for residential alternative energy projects.

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